|  |  |
| --- | --- |
|  | **AMERICAN INTERNATIONAL UNIVERSITY – BANGLADESH (AIUB)**  **Faculty of Engineering** |
| **Course Name**: Data Communication **Term**: Mid  **Quiz**: 03 **Total Marks**: 10 Marks **Time**: 30 Minutes | |

**Write the answers in the box. Your font and font size should be legible**

|  |  |
| --- | --- |
| Name: | NAFINUR LEO |
| ID: | 20-42195-1 |

|  |
| --- |
| Instructions:  * Write **Name**, and **ID** inside the boxes above. * AB-CDEFG-H represents your ID. * **You must write your answer inside the box given below each question**. * Submit your answer script as a **PDF** file named **Quiz 3 Your\_ID.pdf** on **VUES** under **Quiz 3 Submission** by **3.30 PM**. |

1. Assume we have a digital signal with (E+10)\*4 levels and bandwidth is (F+10) kHz. What is the bit rate of the signal? **(5)**

Answer:

Level, L = (E+10)\*4 = 44

Bandwidth, BW = (F+10) kHz = 19 KHz = 19000 Hz

Bitrate = 207480 bps

1. Assume SNR of a channel is (E+5)\*4 dB and bandiwdth is (G+20) kHz. Can we use that channel to transmit a signal with (E+8)\*5 levels? Justify your answer. (5)

Answer:

SNR\_dB = (E+5)\*4 dB = 24 dB

Bandwidth, BW = (G+20) kHz = 25 KHz = 25000 Hz

Target number of levels = (E+8)\*5 = 45

SNR = 251.188

Capacity = 199500 bps

Signal transmitted = 275000 bps

Here, Signal transmitted > Capacity

So, we can’t use this channel to transmit a signal with 45 levels.